

Carcinoma of the Exocrine Pancreas: Update on Staging

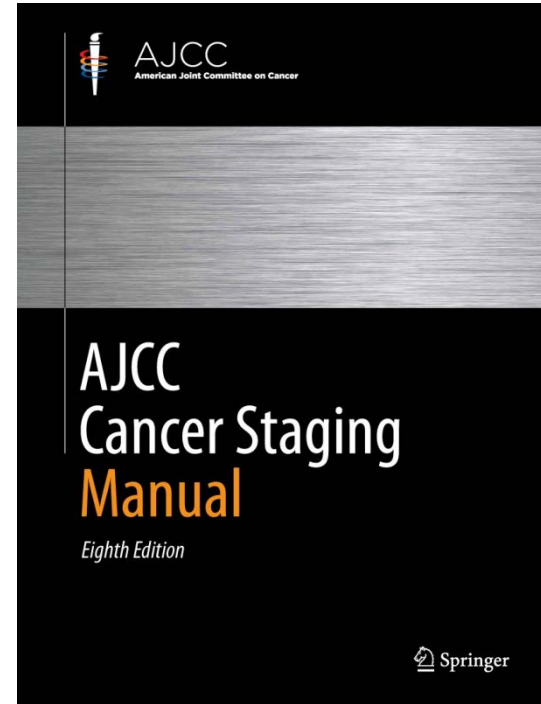
Kay Washington, MD, PhD

Professor of Pathology

Vanderbilt University Medical Center

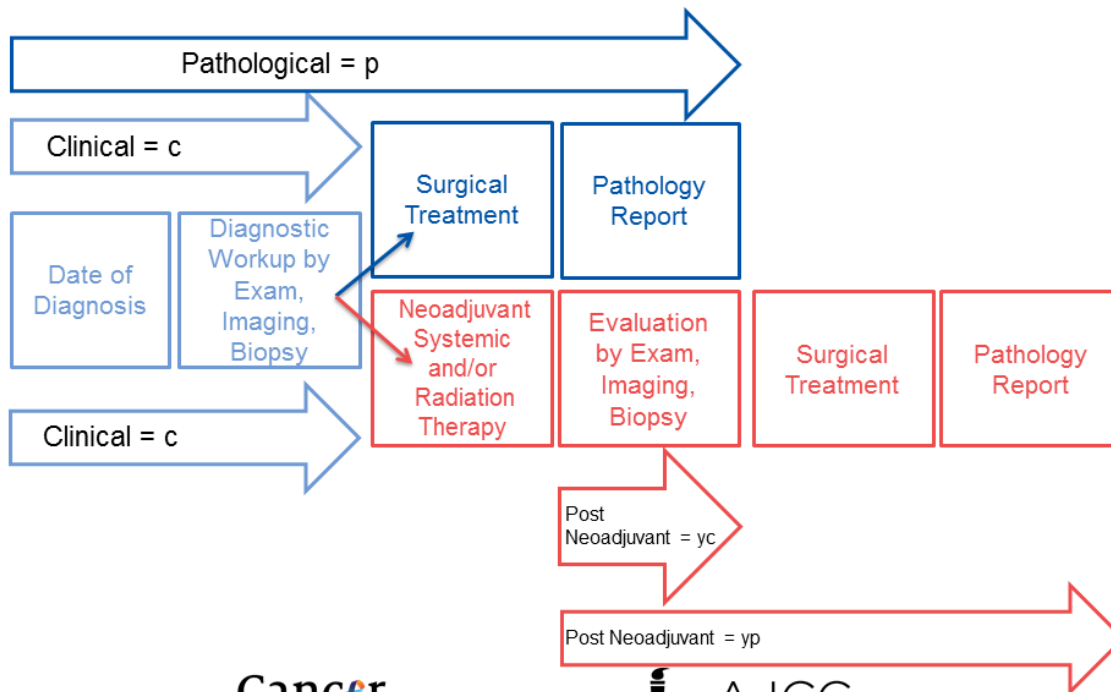


- AJCC TNM terminology and definitions are the common language of cancer
- Allows for worldwide consistency
- Essential for accurate communication for clinical care and research



AJCC Stage Classifications

Defining Time Frame and Criteria



Why do staging systems change?

- More detailed assessment of tumor extent: radiology, pathology
- Larger data sets provide more accurate comparison of outcomes
- Improved understanding of tumor biology
- Molecular tumor characterization
- Improved survival due to treatment
- Provide patients with up-to-date prognostic information

Evidence-based medicine approach

- 18 Expert panels
- 420 contributors, collaborative authorship
- 181 institutions, 22 countries
- Core Committees:
 - Content harmonization
 - Precision Medicine
 - Evidence-based Medicine and Statistics
 - Imaging
 - Data collection

Chair: Dr. Jean-Nicolas Vauthey

Vice Chair: Dr. Tim Pawlik

23 additional members, including 6 pathologists; surgeons, medical oncologists, radiologists, radiation oncologists

US and Canada, Asia, Europe

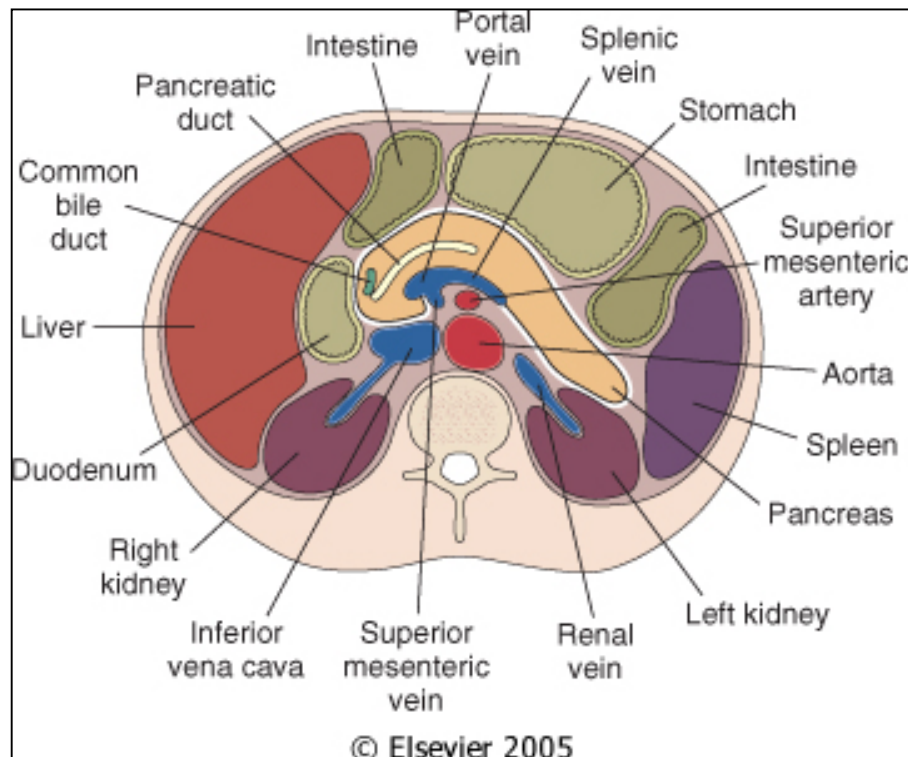
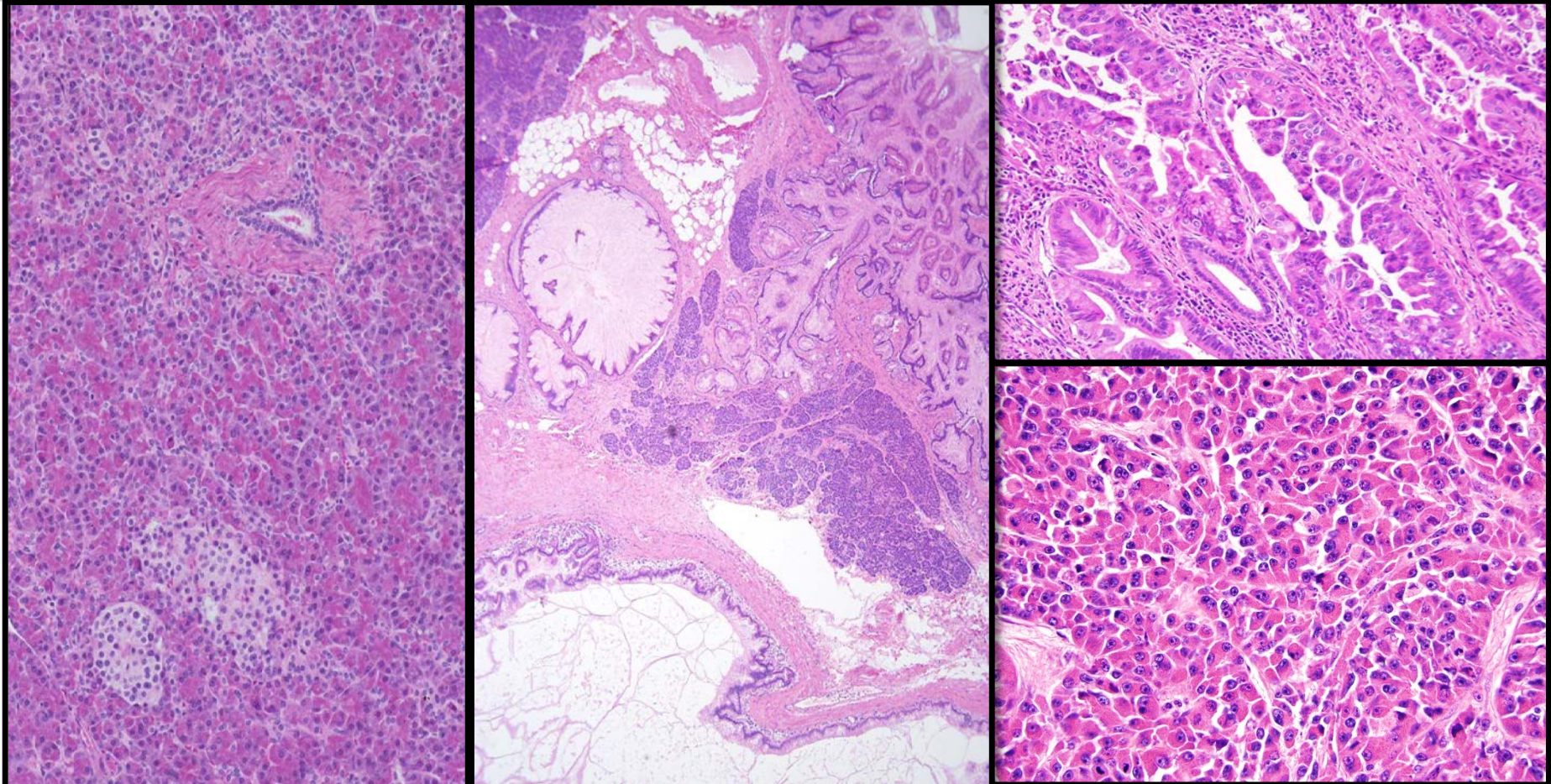


Figure 19-1 Anatomic relationships of the pancreas seen in a cross-section of the abdomen at the level of the upper lumbar vertebrae. (From Go VW, et al (eds): The Pancreas: Biology, Pathobiology, and Disease, 2nd ed. New York, Raven Press, 1993.)

Exocrine pancreas: What tumor types are included?

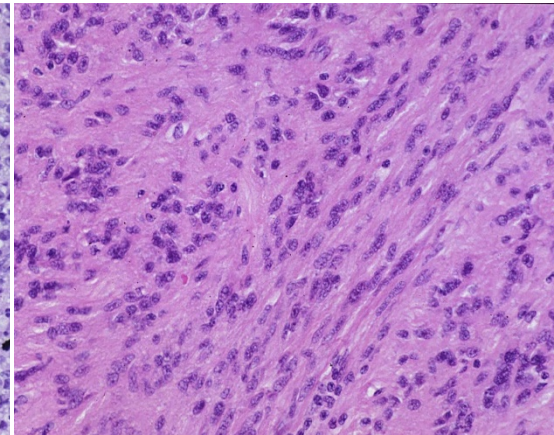
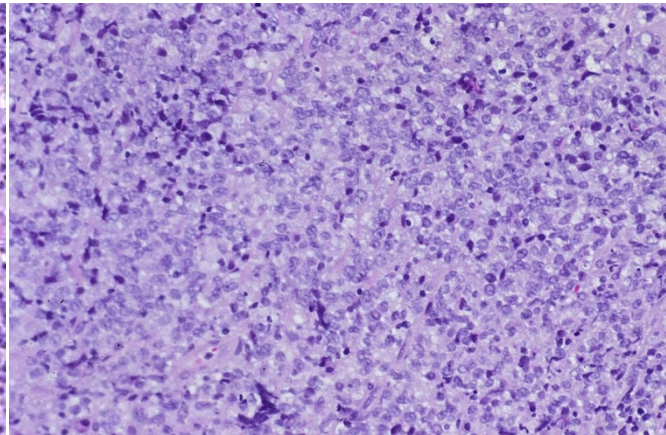
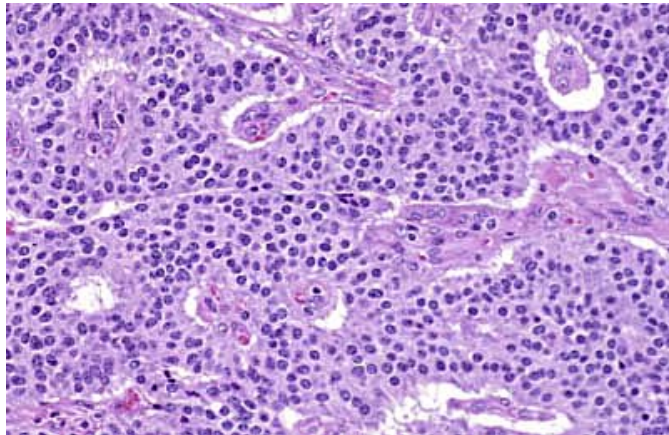
- Adenocarcinoma, not otherwise specified
- Pancreatic ductal adenocarcinoma
- Acinar cell adenocarcinoma
- Intraductal papillary mucinous neoplasm with associated invasive carcinoma
- Mucinous cystic neoplasm with associated invasive carcinoma
- Colloid carcinoma
- Solid pseudopapillary neoplasm
- Neuroendocrine carcinoma and mixed exocrine-endocrine carcinoma
- Pancreatoblastoma
- Rare subtypes of adenocarcinoma: undifferentiated carcinoma with or without osteoclast-like giant cells, hepatoid carcinoma, medullary carcinoma

Normal pancreas, IPMN, and carcinomas

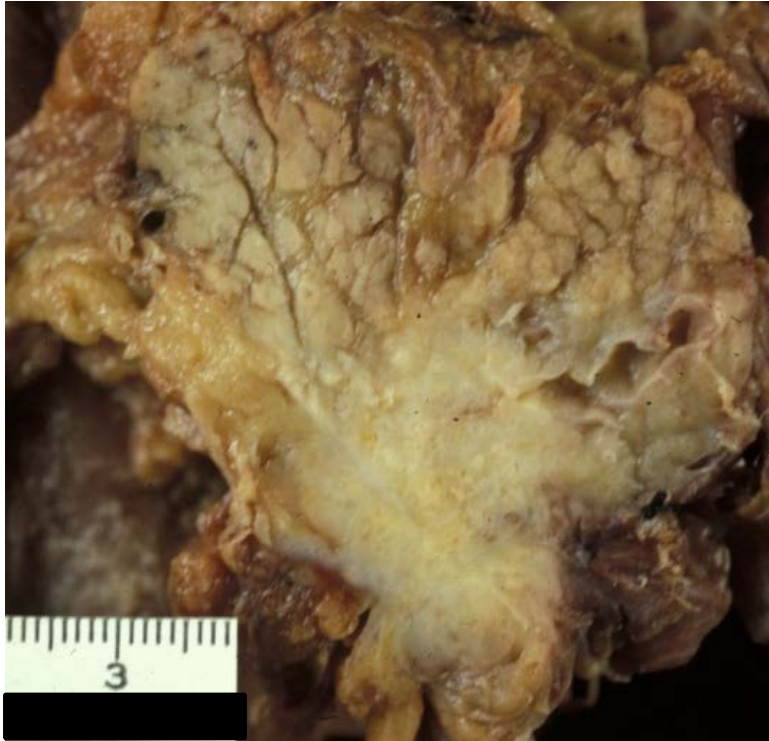


Exocrine pancreas: What tumor types are NOT included?

- Well differentiated neuroendocrine tumor (islet cell tumor)
- Carcinoma of the ampulla of Vater
- Lymphoma
- Sarcoma



Assessment of Tumor Size



- Lack of pancreatic capsule
- Variable amount of adipose tissue
- Prominent stromal response
- Most resectable cancers involve the peripancreatic fat (91%)

Changes to T Category Definitions

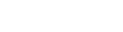
	7 th Edition	8 th Edition	Comments
T1	Tumor limited to pancreas, ≤ 2 cm	Tumor ≤ 2 cm (<i>T1a ≤ 0.5 cm; T1b >0.5 and <1 cm; T1c 1-2 cm</i>)	T1 now divided into T1a, T1b, T1c
T2	Tumor limited to pancreas, >2 cm	Tumor >2 cm and ≤ 4 cm	
T3	Tumor extends beyond the pancreas but without involvement of the celiac axis or the SMA	Tumor > 4 cm	
T4	Tumor involves the celiac axis or SMA (unresectable primary tumor)	Tumor involves celiac axis, SMA, and/or common hepatic artery, regardless of size	Resectability criterion removed

Comparison of AJCC 7th and 8th editions

Seventh edition

Primary tumor (T)

Tis	Carcinoma <i>in situ</i>
T1	Limited to the pancreas, ≤ 2 cm in greatest dimension
T2	Limited to the pancreas, > 2 cm in greatest dimension
T3	Extends beyond the pancreas but without involvement of the CA or the SMA
T4	Involves the CA or the SMA (unresectable)



Eighth edition

Tis	Carcinoma <i>in situ</i>
T1	≤ 2 cm in greatest dimension
T2	> 2 cm and ≤ 4 cm in greatest dimension
T3	> 4 cm in greatest dimension
T4	Involves the CA, the SMA, and/or CHA

Regional LNs (N)

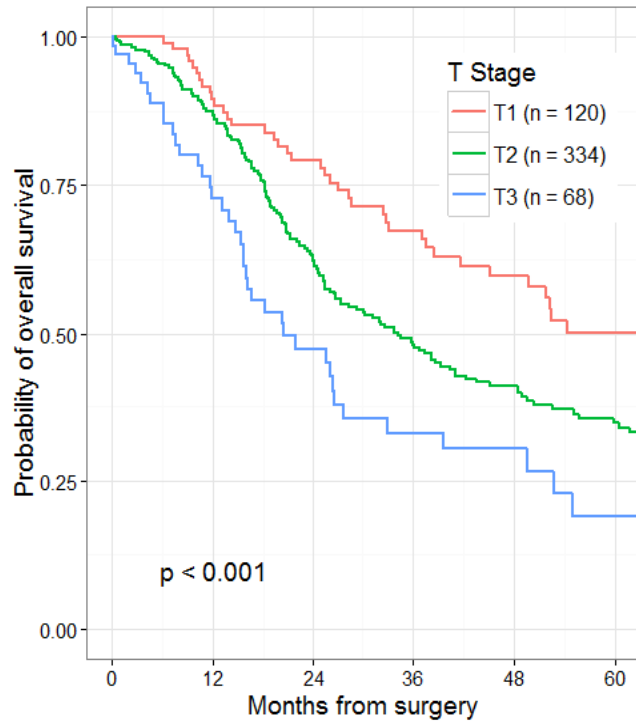
N0	No regional LN metastasis
N1	Regional LN metastasis



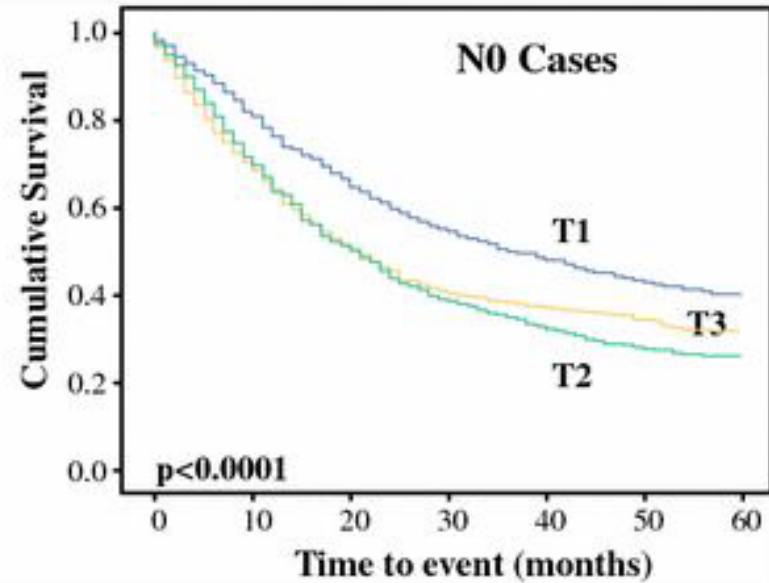
N0	No regional LN metastasis
N1	1-3 regional LN metastasis
N2	≥ 4 regional LN metastasis

Kwon W, et al. J Hepatobiliary-Pancreatic Sciences 25(9):418-427, 2018

AJCC 8th edition T categories



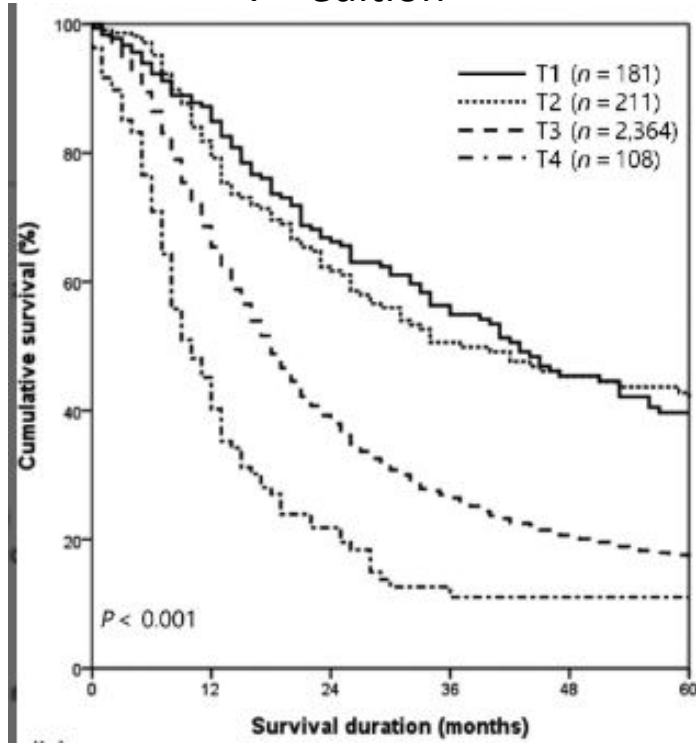
SEER data, 3756 cases



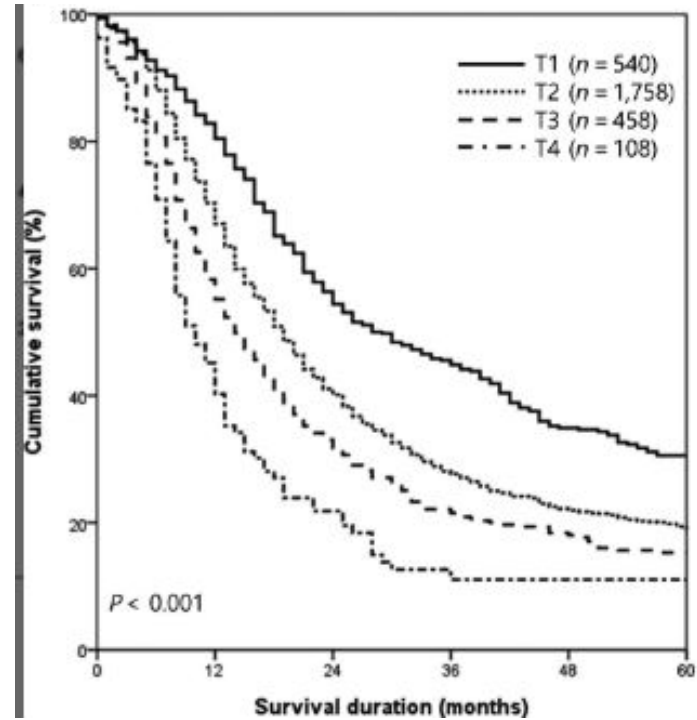
Ann Surg Oncol (2016) 23:2010–2018
DOI 10.1245/s10434-016-5093-7

T categories, AJCC 7th and 8th edition

7th edition



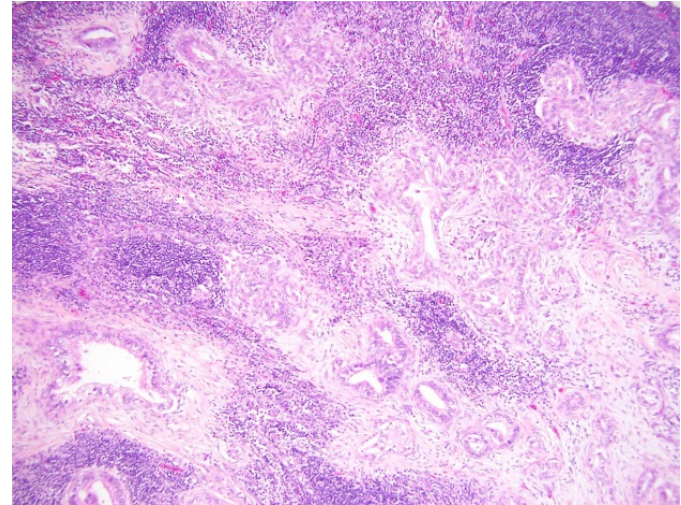
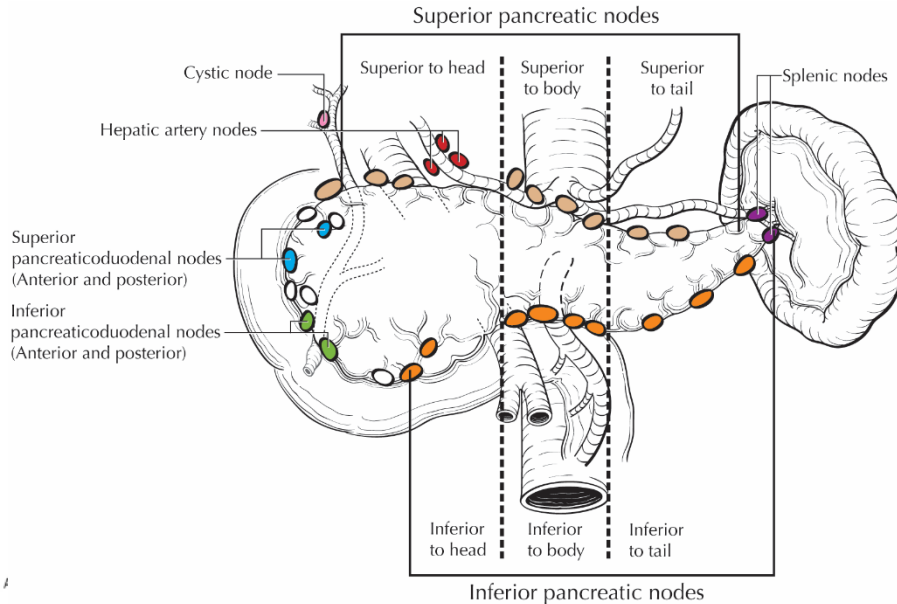
8th edition



Kwon W, et al. J Hepatobiliary-Pancreatic Sciences 25(9):418-427, 2018

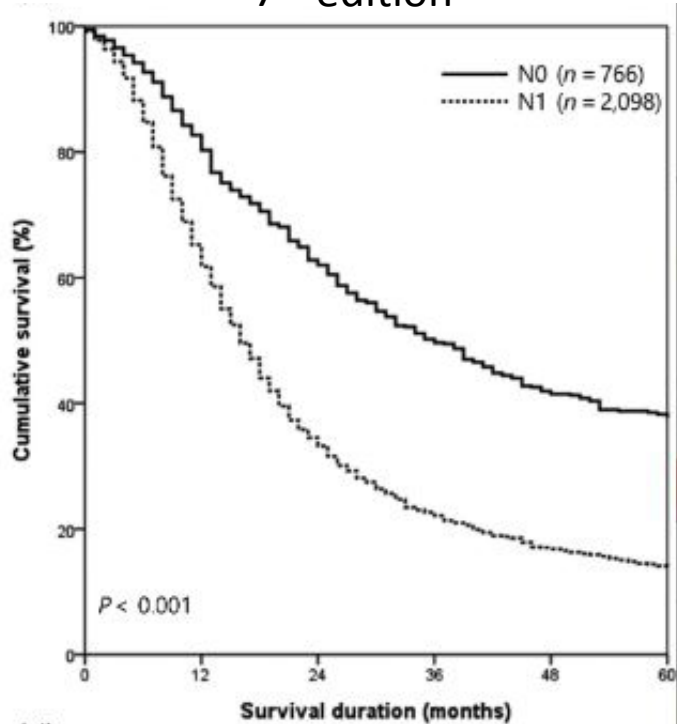
Changes to N Category Definitions

	7 th edition	8 th edition
N1	Regional lymph node metastasis	Metastasis in 1 to 3 regional lymph nodes
N2	Not used	Metastasis in 4 or more regional lymph nodes

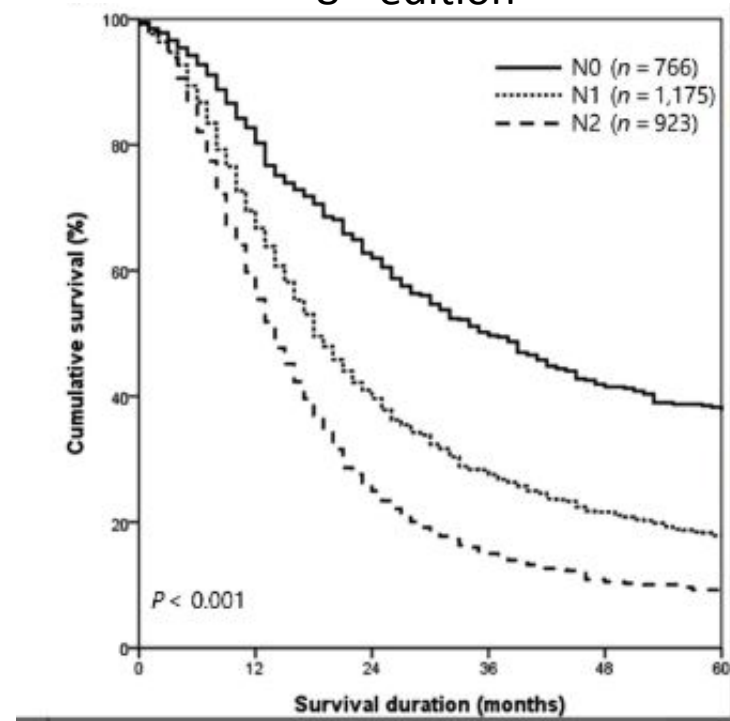


N categories, AJCC 7th and 8th editions

7th edition



8th edition



Kwon W, et al. J Hepatobiliary-Pancreatic Sciences 25(9):418-427, 2018

Comparison of AJCC 7th and 8th editions

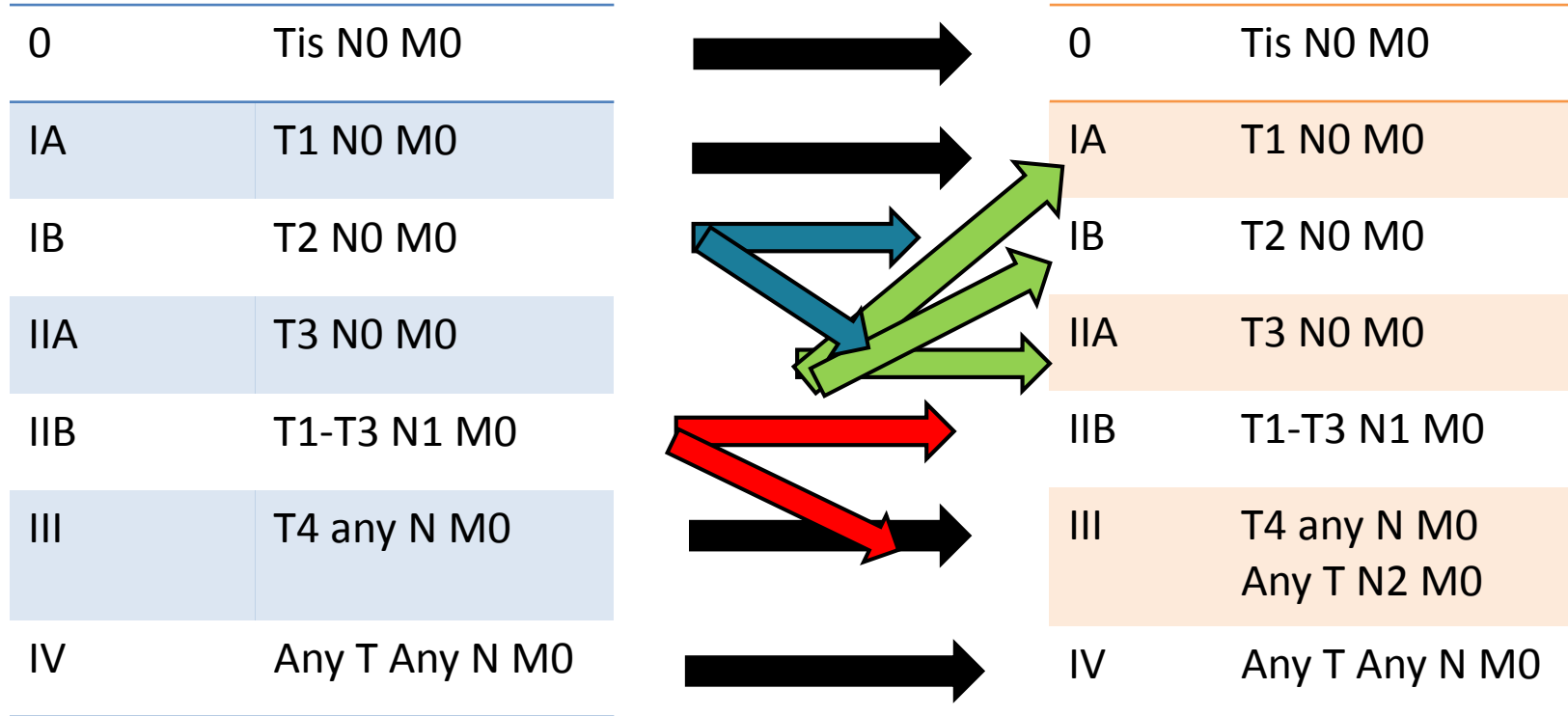
AJCC 7th edition

Stage	T	N	M
0	Tis	N0	M0
IA	T1	N0	M0
IB	T2	N0	M0
IIA	T3	N0	M0
IIB	T1, T2, or T3	N1	M0
III	T4	Any N	M0
IV	Any T	Any N	M1

AJCC 8th edition

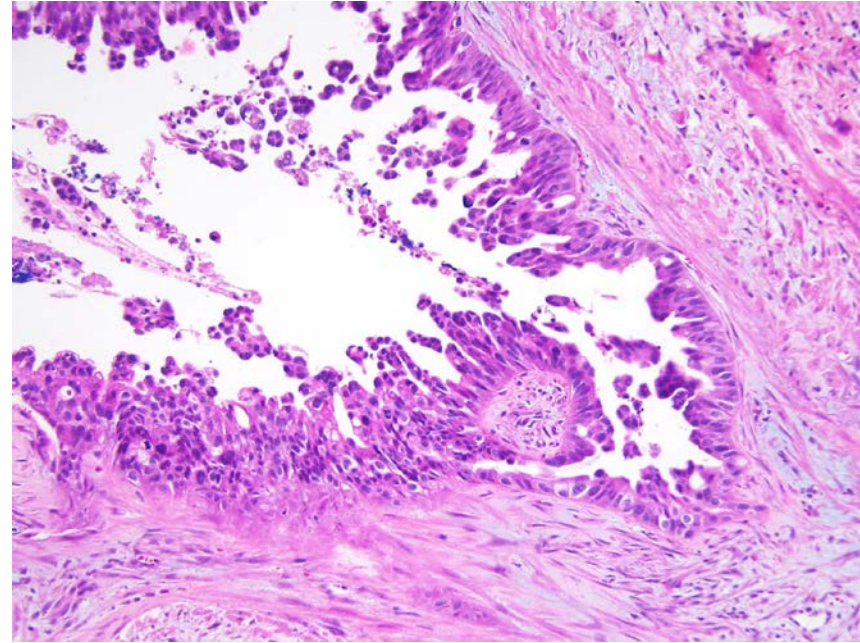
Stage	T	N	M
0	Tis	0	M0
IA	T1	N0	M0
IB	T2	N0	M0
IIA	T3	N0	M0
IIB	T1, T2, or T3	N1	M0
III	T1, T2, or T3	N2	M0
III	T4	Any N	M0
IV	Any T	Any N	M1

AJCC 7th and 8th editions Prognostic Stage Groups



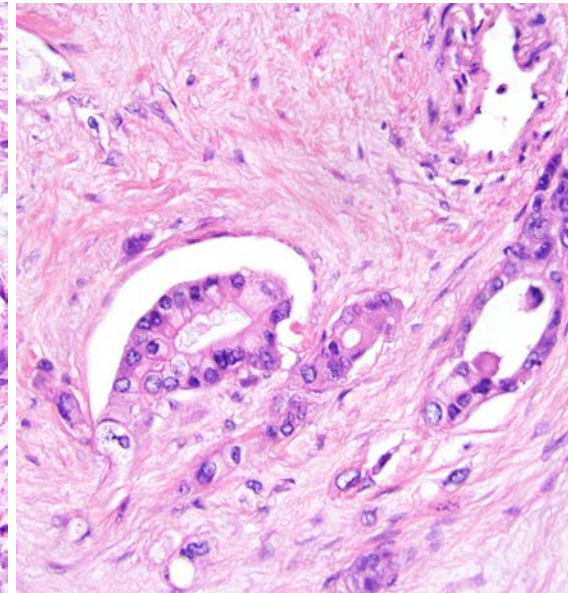
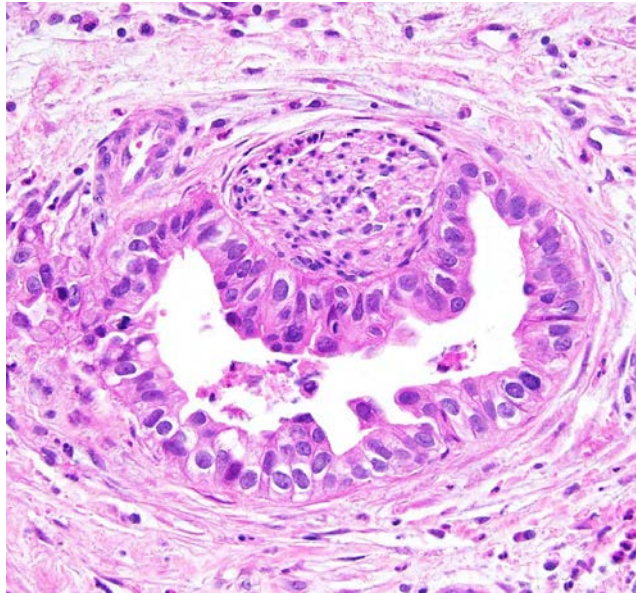
Tis includes:

- High grade pancreatic intraepithelial neoplasia (PanIn-3)
- IPMN with high grade dysplasia
- Intraductal tubulopapillary neoplasm with high grade dysplasia
- Mucinous cystic neoplasm with high grade dysplasia



Additional Prognostic Factors

- Involvement of visceral arteries
- Preoperative CA 19-9 level
- Completeness of resection (margin status)
- Tumor regression after neoadjuvant therapy
- Grade
- Perineural invasion
- Lymphovascular invasion

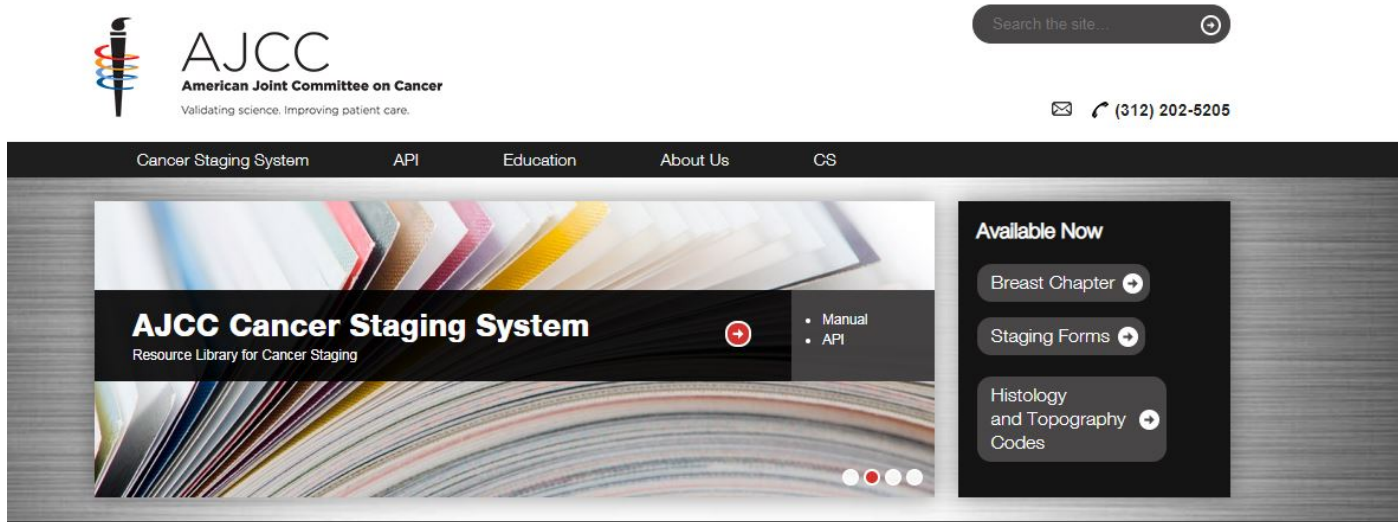


Summary of Key Changes to Pancreas Exocrine Staging

- T1 has been subdivided into T1a, T1b, T1c based on size.
- T2 and T3 categories are based on tumor size, not invasion of peripancreatic fat.
- T4 is based on involvement of arteries; resectability has been removed from the definition.
- Node-positive N1 disease has been subdivided into N1 and N2, based on number of positive lymph nodes.

AJCC Web Site and CAnswer Forum

- <https://cancerstaging.org>



The screenshot shows the AJCC Cancer Staging System website. At the top left is the AJCC logo with the tagline "Validating science. Improving patient care." To the right is a search bar and a phone number: (312) 202-5205. Below the header is a navigation menu with links for "Cancer Staging System", "API", "Education", "About Us", and "CS". The main content area features a large banner for the "AJCC Cancer Staging System" with the subtitle "Resource Library for Cancer Staging". To the right of the banner are two columns of links: "Manual" and "API" under a red plus icon, and "Available Now" with buttons for "Breast Chapter", "Staging Forms", and "Histology and Topography Codes".

- CAnswer Forum:
Submit questions regarding staging
<http://cancerbulletin.facs.org/forums/>

